

The Division of Forestry and Wildlife
Hawaii Department of Land and Natural Resources

Hawaii's Division of Forestry & Wildlife (DOFAW) is the largest land management entity in the State of Hawaii, with direct responsibility for approximately 800,000 acres of state trust lands. These lands are managed through an integrated system of forest and natural area reserves, plant and wildlife sanctuaries, and wilderness and game management areas. Within this system is the 11th largest area of State-managed forest lands in the United States and the vast majority of America's tropical rainforests.

DOFAW is the oldest forest management agency in the western United States, originating in 1903 with a mandate to protect and enhance forested watersheds. Current responsibilities are statewide for watershed and endangered species protection, wildland fire suppression, public trails and access, and game management programs. Cooperative natural resource programs are also planned and implemented on other public and privately owned lands through natural area and watershed partnerships, forest stewardship programs, urban forestry projects and other agreements.

DOFAW's physical infrastructure include an administrative unit in Honolulu, branch management offices on six islands, a central tree nursery and numerous field management structures. Current staffing levels are @ 154 full time positions, representing a wide diversity of professional, technical, and blue collar workers. Current annual budget is @ \$12 million with a wide range of Federal and State funding sources. DOFAW has 6 program areas; Watershed Protection and Management, Native Resources Protection & Management, Outdoor Recreation Resources Management and Development, Forest Products Development, Public Information and Stewardship, Planning and Administrative Support.

WATERSHED PROTECTION & MANAGEMENT PROGRAM
FY 1998-00 Accomplishments

Objective: Ensure viable water yields by protecting and enhancing the condition of Hawaii's forested watersheds to retard rapid run-off of storm flows, prevent and reduce soil erosion, and improve infiltration rates.

Action: Prevent and suppress forest and range fires on key watersheds to include forest reserves, public hunting areas, and natural area reserves. Cooperate with established fire control agencies for the protection of other wildlands not within departmental protection areas to the extent needed to provide for public benefits and environmental protection.

- Fought 38 fires state-wide totaling over 48,000 acres.
- Maintained 57 miles of firebreak roads.
- Constructed a firebreak road in the Kuaokala forest reserve, Oahu.
- Conducted control burns (850 acres) on ranch land adjacent to the Kapapala Forest Reserve to reduce the fire threat, Hawaii Island.
- Participated in the suppression of five major forest fires in California.

- Conducted a state-wide series of basic and specialized training for department and county fire department personnel (Fire Operations in the Urban Interface, Advanced Wildland Fire Investigation, Command & General Staff, Dozer Wildland Fire Workshop, Wildfire Powersaw, Basic Incident Command System)
- Participated in fire prevention education venues with Smokey Bear including classroom visits, county fairs, the Makawao Rodeo, Honolulu City Lights, and the Kailua 4th of July parade.
- Conducted in-house inspections of federal excess personal property equipment (total value of \$329,958 worth of fire equipment acquired)
- Provided assistance to the Kahoolawe Island Reserve Commission in formulating a fuels reduction plan with prescribed fire
- Designed the DOFAW Fire Management Web Site (www.state.hi.us/dlnr/dofaw/fmp.)

Action: Control livestock trespass and non-native animals in priority watersheds.

- Removed 16 feral cattle from the Puu Ka Pele Forest Reserve, Kauai. .
- Participated in the eradication of cattle in the Koolau, West Maui, and Kula Forest Reserves on Maui.
- Conducted aerial eradication of cattle on private land as part of the West Maui Watershed Partnership.
 - Conducted aerial surveys for cattle trespass in state forest reserves on Hawaii.

Action: Survey and control noxious plants, forest insects and diseases that can damage watershed integrity and native ecosystems .

- Monitored the spread of *Septoria passiflora* fungus on Banana Poka statewide.
- Introduced the fungus, *Septoria passiflora* to other areas that were infested with Banana Poka.
- Controlled noxious weeds and plants on 136 acres at various locations on Kauai.
- Introduced the bacteria *Ralstonia* for the control of Kahili ginger and monitored the efficacy and spread.
- Surveyed and removed *Clidemia* plants in the Honolulu Watershed forest reserve.
- Surveyed areas on Maui for parrots, caribbean coqui frogs, and other alien vertebrates.
- Conducted forest pest surveys in the Koolau, West Maui, and Hana forest reserves on Maui.
- Eradicated 836 acres of *Miconia calvenscens* on lands in and adjacent to the Hana forest reserve.

Action: Plan for and implement the reforestation and management of deteriorating and/or disturbed state watersheds as may be appropriate for watershed value enhancement.

- Replanted 1/4 acre of Norfolk Island pine tree seedlings in Kalihi Valley and Waiahole, Oahu.

- Planted 2 acres of seedlings in the Kuaokala forest reserve for erosion control.

Action: Promote, encourage, and advocate for incentives to encourage the maintenance and enhancement of key watersheds on private lands.

- Participated within the Koolau Mountains, East Maui, and West Maui Mountains Watershed Partnership programs.
- Helped establish new watershed partnership programs on Lanai and Molokai. .

Action: Review and commented on Environmental Assessments, Environmental Impact Statements, Conservation District Use Application Permits and other Land Use applications.

- Waahila Ridge 138kv Transmission Line by Hawaiian Electric Company, Inc, Island of Oahu.
- Saddle Road Reconstruction and Realignment Project by Federal Highways Administration.
- 115 Land Use request for comments to DOFAW.
- Diamond Head State Monument Master Plan, DLNR.
- Kahului Flood Control Project, Kanaha Pond, Maui.
- University of Hawaii, Mauna Kea Science Facilities, Master Plan, Big Island, Hawaii.
- Oahu Forest National Wildlife Refuge by Castle and Cook, Inc.

NATIVE RESOURCES PROTECTION & MANAGEMENT PROGRAM

FY 1998-00 Accomplishments

Objectives: (1) Protect and enhance the condition of Hawaii's unique native plant and animal species, and native ecosystems for their inherent value to Hawaii's citizens and for their productive value to science, education, industry and the cultural enrichment of future generations. (2) Prevent species extinctions whenever possible.

Action: Insure viable populations of native species and increase populations of endangered species by protecting and managing their natural habitats via a system of state-owned and managed sanctuaries, forest, natural area and cooperative managed areas.

- Outplanted 160 trees in nene sanctuaries (Kipuka Ainahou and Puu 6677), Hawaii island
- Maintained fences and controlled pigs and conducted weed control on 10 miles of trails in the Hanawi Natural Area Reserve.
- Inspected and repaired breaks in 55 miles of fencing and constructed water catchment facility to provide a supplemental source of water for fire suppression activities in Palila Critical Habitat.
- Maintained 3 endangered tree snail sanctuaries in Pahole Natural Area Reserve.
 - Completed 5-acre and 120-acre ungulate-proof fenced units in Manuka NAR to protect existing and outplanted endangered plant species.

- Completed repairs of 1.5 miles of vandalism on pig-proof fence in Puu Makaala NAR and resumed animal control via public and staff hunting.
- Began construction of 3 miles of pig-proof fence to create a 290 acre unit in Puu Makaala NAR for endangered plant habitat and ecosystem protection.
- Participated in the `Ola`a-Kilauea Management Partnership which is addressing the regional management of biological resources on northeastern Mauna Loa.
- Completed installation of fence posts along mauka boundary fenceline at Puu Waawaa Forest Bird Sanctuary.

Action: Conduct an aggressive propagation and re-introduction program for T&E species (e.g. endangered bird rearing facility, plant nursery and out planting)

- Contracted the Peregrine Fund, Inc. & Zoological Society of San Diego to operate and manage the Maui Bird Conservation Center at Olinda and related projects at the Keauhou Bird Conservation Center, Hawaii. The Hawaii program maintained 10 species in captivity for production or surrogate research and produced 63 nene, 20 puaiohi, 14 palila, 3 Hawaii creeper, 4 Maui parrotbill, 10 Hawaii akepa, 5 alala, 1 common amakihi, 4 iiwi, and 6 Hawaii elepaio,
- Participated in the logistics for release and follow-up of 19 captive reared Puaiohi on Kauai in cooperation with USGS/BRD and the Peregrine Fund.
- Released 4 captive-reared nene goslings in the West Maui Forest Reserve.
- Released 24 captive-reared nene into Hanalei National Wildlife Refuge to establish a fourth population on Kauai.
- Reared and protected 17 nene goslings in secure habitat at Keaau, Hawaii Island.
- Increased nene numbers from 6 to 24 animals in Kapapala Cooperative Game Management Area through an aggressive predator control and habitat management program by volunteer hunters.
- Propagation efforts provided over 12,000 individual rare plants. Over 9,000 of these plants were returned to their native habitats statewide, covering over 300 rare native species. Excess seeds and propagules were distributed to state cooperators and the public.
- Maintained and enhanced over 120 plant exclosures on various sites on all islands for protection of Hawaii's rare plants.
- Cooperatively constructed 16 new plant exclosures statewide. Kalalau Rim Plant Sanctuary on Kauai now provides protection for rare plants occurring naturally at the site and a secure site for 43 outplanted species.
- Cooperatively funded, managed, and improved three rare plant mid-elevation nurseries on Kauai, Oahu, and Hawaii. Cooperatively funded and managed Lyon Arboretum Tissue Culture Laboratory as a statewide repository of rare plant material.
- Assisted Housing & Community Development Corp. of Hawaii and Department of Transportation in development of Hawaii's first Habitat Conservation Plan (HCP) for protection of an endangered plant species.
- Funded captive rearing of endangered tree snails and constructed snail rearing house at Lyon Arboretum.

Action: Develop, protect and maintain wetland habitat through management and cooperative agreements with other agencies and private organizations.

- Conducted semi-annual waterbird censuses on Niihau, Kauai, Oahu, Molokai, Maui, Lanai, and Hawaii.
- Prepared topographic survey and final bottom contour design of Phase II of the Kawaiiele Sand Mine Bird Sanctuary development on Kauai.
- Maintained 10 signs, 1 mile of access road, 3000 feet of fenceline, controlled 22 acres of non- native vegetation at Hamakua Marsh Wildlife Sanctuary, Oahu.
- Maintained 1 observation building, parking lot, 1 mile of perimeter fence, 8 signs, four miles of road, deepwell pumps (352 million gallons), and controlled 26 acres of non-native vegetation at Kanaha Pond, Maui.
- Mowed and maintained waterfowl feeding areas at Keaau Waterbird Sanctuary and the Keauhou and Kahuku Ranch Nene Sanctuaries, Hawaii island.
- Controlled vegetation on over 100 acres of wetland habitat at Kawai Nui Marsh.
 - Conducted weed control and trash removal at Paiko Lagoon, Oahu.

Action : Control non-native and maintain non-native animal populations at non-damaging levels for unique native species and ecosystems

- Increased public hunting for pigs by expanding hunting seasons in watersheds and forest reserves.
- Conduct aerial shooting of mouflon/feral sheep on Mauna Kea every six months as required by Federal Court Order..
- Implemented emergency damage control hunt in the Puu Waawaa Forest Bird Sanctuary to reduce over browsing of vegetation by ungulates in the area.
- Organized control methods (including public hunting) eliminated over 178 pigs, 525 goats, and 25 axis deer from state natural area reserves.

Action: Continue to support efforts for brown tree snake and other alien species control by promoting interagency cooperation, expanding the network of volunteers, and updating training and equipment for effective rapid response capacity.

- Monitored the location of Caribbean frogs and their spread through the Puna and South Hilo districts through a public hotline. Callers were advised on control methods.
- Responded to and coordinated searches on Hawaii for six snake alerts with the State Department of Agriculture, Vector Control Branch. Day and night surveillance and baited traps were maintained for at least a week - no snakes captured.
- Conducted follow up investigations on 24 alien animal reports: 11 mongoose, 5 snake, 1 green iguana, 1 red-vented bulbul, 2 rabbit, 1 Jackson's chameleon, salamanders and 2 "large cats" on Kauai. Only one green iguana confirmed by capture.
- Provided ongoing support for the Maui Invasive Species Committee (MISC), including meeting participation, strategic priority setting, and coordination of funding requests.
- Assisted with the initiation of the Big Island Invasive Species Committee, assisted in preparation of its strategic plan, provided participation and logistical support for its ongoing activities, and assisted in its first volunteer control operation.
- Assisted with the initiation of the Oahu Invasive Species Committee and assisted in control of fountain grass and Rubus discolor.

- Participated as part of a National Invasive Species Advisory Committee, which is intended to identify and oversee implementation of nationwide improvements in federal actions and federal assistance to states to prevent and mitigate alien species invasions.
- Implemented rule changes forcing the closure of commercial trade in Jackson's chameleons and other injurious wildlife, so as to prevent further spread of these species in the state.
- Monitored range and spread of other invasive alien reptiles currently restricted to Oahu.

Action: Support efforts to upgrade the Department of Agriculture program to intercept noxious plant and animal species coming into Hawaii.

- Provided ongoing support for the Coordinating Group on Alien Pest Species (CGAPS), assisted with ongoing efforts to acquire a CGAPS coordinator position, led CGAPS efforts to develop an assessment of capacity needs to provide Hawaii effective and comprehensive alien-species prevention and control programs.
 - Continued participation in the Alien Species Advisory Committee to the Kahului Airport Expansion. Assisted with efforts to assess pest risks at the airport, devise baseline surveys on airport grounds for alien organisms, and re-design the declaration forms for arriving passengers.

Action: Manage the State Seabird Sanctuary system and other seabird nesting colonies by controlling predators, enhancing nesting habitat, salvaging and rehabilitating grounded seabirds, and enforcing wildlife sanctuary rules.

- Assisted the contractor (A.B.R. Inc.) with the survey of threatened and endangered seabirds using marine radar at sixteen sampling stations on Kauai to monitor their population trends. Trend continues to decline.
- Conducted "Save Our Shearwater" program on Kauai, recovered 1467 birds, of which 1350 were banded and successfully released to the wild.
- Installed windows and new roof cement in the Kure Atoll field camp building, assisted with cleanup efforts and damage assessment from the shipwreck of a commercial fishing vessel which ran aground on Kure Atoll.
- Conducted survey of 16 seabird and 4 migratory shorebirds species at Kure Island. Banded seabird chicks and recorded number and cause of mortalities. Stationed an intern at Kure Atoll for three months to control vegetation and provide suitable nesting habitat for 16 species of seabirds.
 - Surveyed Oahu Offshore Island State Seabird Sanctuary islands for seabirds and made 70 incidental monitoring trips to assess habitat conditions and possible threats to the sanctuary. Banded nesting birds and chicks, controlled weeds, removed trash and entanglement hazards (e.g. 30 lbs. of drift net).
 - Banded 401 seabirds at nesting colonies or when grounded and successfully salvaged and released 40 seabirds on Maui. Formally censused Huelo and Mokapu islets for birds.

Action: Protect native species and their habitats through predator control and other improvement activities.

- Maintained 3 predator control grids in Poouli habitat in Hanawi Natural Area Reserve.
 - Controlled rats in three State-owned Forest Reserves during the Oahu 'Elepaio (*Chasiempis sandwchenis ibidis*) nesting season in an attempt to increase nesting success.
 - Continued rat control/monitoring operations at Kure Atoll to detect any remnant rat populations remaining on the island after a rat eradication project implemented in 1993.
 - Controlled predators in sanctuaries on Hawaii using live traps and toxicants. Removed a total of 277 mongooses, 31 cats, 7 dogs and 5 aukuu. Operated 300 bait stations to control rats and mice.
 - Removed Gorse was from the Kipuka Ainahou Nene Sanctuary where it had begun to spread from infestations on the upper slopes of Mauna Kea.
 - Controlled predators at Kanaha Pond Waterbird Sanctuary on Maui. Removed 60 cats, 9 rats, and 2 mongoose using live traps. Operated 82 bait stations for mongoose and rat control.
- Controlled predators at Hamakua Marsh, Oahu using live traps and poison bait blocks. As a result of control efforts, one Hawaiian stilt chick, four Hawaiian gallinule chicks, and one Koloa duck chick fledged from the area.
- Conducted a predator impact study at Malaekahana State Recreation Area to quantify the effects of small mammal predators (dogs, cats and mongooses) on Wedge-tailed shearwater nesting colonies.
 - Predator control efforts increased Kaena Point albatross numbers from 3 in 1995 to 22 in 1999 and Kapapala nene from 6 in 1997 to 27 in 2000.
 - Participated in organized statewide effort to obtain an EPA registration for aerial broadcast of rodenticide for control of rats, mice, and mongooses in natural areas of importance for endangered native birds. Activities included funding studies and organizing the research program to obtain the data needed to justify and defend an aerial broadcast registration.

Action: Maintain facilities, improvements, signage and access to forest reserves, sanctuaries, and natural area reserves.

- Maintained 30 miles of existing ungulate control fence throughout the NARS with 3 miles constructed at Puu Makaala NAR.
- Removed the remnants of the Kahuku cabin from the Koolau Mountains.
- Constructed and maintained boardwalks in Alakai Wilderness and Kaala NAR.
- Maintained vehicle barriers at Ka'ena Point and Ahihi-Kina'u NAR to protect natural and cultural features from off-road damage.
- Completed the construction of a management cabin to serve as a base of operation for resource management crews in the central Koolau Mountains, Oahu
- Constructed a picnic site which included a bathroom with composting toilet and tool storage room near the Kaala NAR for use by volunteers and researchers.

Action: Develop and acquire new management techniques and equipment for managing and monitoring native ecosystems, including alternative techniques for introduced animal and plant control.

- Funded development of release techniques for endangered Puaiohi on Kauai. Released 14 captive-reared Puaiohi in Alakai Swamp.

- Started discussions with private landowners on development of Safe Harbor Agreements to allow reintroduction of endangered nene into former range on private lands.
 - Funded research study on potential affects of diphacinone toxicant on nontarget and protected birds to support development of a broadcast registration of this toxicant to control rats in native ecosystems. Conducted 2 field trials of the efficacy of diphacinone bait blocks on mongoose removal. Trials involved trapping, marking, radio collaring and releasing individual animals, followed by a three week baiting period, and finally, a follow up trapping period to determine bait efficacy.
 - Initiated field trials in Puu Waawaa Forest Bird Sanctuary, Hawaii of a new technique for the simultaneous monitoring of ungulate density and their impact on vegetation at varying densities.
 - Helped establish a statewide monitoring/survey methods and documentation forms for critically endangered plants species in conjunction with the Hawaii Rare Plant Restoration Group.
 - Upgraded GIS computer mapping capabilities for long term monitoring and mapping of both T&E species and ecosystems including threats to populations.
- removal and prepared a publication for the August, 2000 edition of the 'Elepaio newsletter.
- Developed an effective herbicide technique was discovered for the removal of red mangrove at Hamakua Marsh, Oahu. A basal bark application of Garlon 4 (diluted with JLB oil) resulted in particularly rapid necrosis (~1 month). Trial plots were established to track the effectiveness over time on different tree sizes and stand densities. Results are expected to be published for use by other land managers.
 - Conducted vegetation control trials at Green Island, Kure Atoll to determine a methodology for control of *Verbesina*, which has overrun a majority of the island.

Action: Conduct surveys of rare and endangered plants and wildlife and monitor the effects of management activities.

- Conducted islandwide surveys for endangered nene on Kauai, Maui and Hawaii.
- Assisted NPS with surveys for forest bird in Haleakala National Park.
- Assisted USGS/BRD with surveys for endangered Puaiohi in Koaie Stream area of Alakai Swamp.
- Monitored nesting success of the Oahu 'Elepaio (*Chasiempis sandwchenis ibidis*) in areas with and without predator control to remove rats. Predator control increased nesting success 100%.
- Conducted a comprehensive forest bird survey on 26 transects in the Alakai Wilderness Preserve with cooperators of USFWS and USGS/BRD. Only the Puaiohi of the six endangered Kauai forest birds was found. Emphasis was placed on determining of the status of Akikiki, and Kauai Akepa, species of concern.
- Assisted U.S. Army Environmental in island wide surveys of T+E plants on Oahu as part of Makua Mitigative Measures.
- Assisted the National Tropical Botanical Garden in Statewide survey/monitoring of critically endangered plants as part of USFWS Emergency Measures Project.
- Monitored 55 miles of ground based ungulate and weed transects throughout the NARS system. Established 9 miles of new transects.
- Jointly conducted 10 separate endangered tree snail surveys in the Waianae and Koolau Mountains.

Action: Maintain awareness and promote dialogue to balance the differing DOFAW mandates of protecting native ecosystems and providing recreational hunting opportunities.

- Participated in a number of facilitated working groups to allow increased input by all concerned parties dealing with hunting issues on State lands (Molokai Hunting Working Group, the Maui Axis Deer Group, and the Natural Area Working Group (Puna and Kohala regions of the Big Island).
- Provided logistic support and met four times with Hawaii Hunting Advisory Council to discuss management of recreational hunting and how it is integrated in the Departments overall management program.

Action: Administer the Natural Area Partnership Program (NAPP).

- Provided matching funds and administered program for the management of natural resources on private lands permanently dedicated to conservation encompassing 7 projects covering 25,000 acres on Molokai, Lanai, and Maui. Private landowner cooperators include The Nature Conservancy, Molokai Ranch, Kaleakala Ranch, Maui Land & Pineapple, Amphac JMB, and Castle & Cooke.

Action: Promote and encourage meaningful applied research that addresses endangered species and natural area management needs and concerns such as limiting factors or critical habitat needs for endangered plant species.

- Issued 32 research permits for T&E plants, 72 research special use permits in the NARS and 55 permits allowing commercial sales of T&E plants from cultivated sources;
- Conducted research on avian disease to investigate the transfer of avian malaria antibodies between mother and offspring.

Action: Develop contingency plans and capacity to rehabilitate wildlife impacts resulting from oil spills and other emergencies.

- Participated in oil spill response and clean-up of Tesoro Single Point Mooring Hose Spill, of September – October 1998. Treated 34 birds for exposure.
- Participated in Kure Atoll spill response and clean up in October 1998.
- Participated in the spill response and clean up of the Fishing Vessel Van Loi grounding on Kauai and the spill of 16,000 gallons of diesel fuel in April, 1999.
- Participated in oil spill response and clean-up of a 4000 gallons of JP5 jet fuel spill at Kaneohe Marine Corps Base Hawaii.
- Participated in Pearl and Hermes Atoll spill response and clean up.
- Participated in 4 oil spill drills (Maui Electric Company, Hawaii Electric Company, Tesoro Hawaii Co., Chevron Co.)
- Treated 13 birds and 1 bat turned in for animal rehabilitation.

OUTDOOR RECREATION MANAGEMENT PROGRAM

FY 1998-00 Accomplishments

Objectives: (1) Enrich leisure time and capabilities of Hawaii's residents and visitors by providing opportunities and facilities for multiple outdoor recreational activities such as hiking, hunting, fishing, bicycles, equestrians and motorized off-road recreation. (2) Maintain trail and access systems for wildland fire control, search and rescue, watershed protection, and other natural resource management activities. (3) Maintain and enhance where possible, a public hunting program of recreational, subsistence, and traditional hunting methods to provided a source of food and outdoor recreation for the public and as a means to manage and control introduced game animals.

Action : Maintain and construct roads and trails to allow managed public use of recreational areas.

Kauai

- Maintained 59 miles of trails, 23 miles of roads, 0.2 miles of fences, 29.5 miles of foot trails and 28 miles of jeep roads in public hunting areas.
- Designed three drizzle herbicide spray units for trail maintenance with the assistance of UH-Extension Service.
- Repaired 2 miles of the Wailua Forest Management Road.
- Established a trail monitoring program for all commercially used trails.
- Expanded trails volunteer work program
 - 48 hours of volunteer from Boy Scout Troop 148 installed quarter mile marker on the Okolehau Trail, Hanalei.
 - Kauai Sierra Club adopts Okolehau Trail.
 - 96 hours of volunteer time was expanded on the Nualolo Cliff Trail.
 - 93 hours of volunteers from the Kauai Resource Conservation Program did weed control work at Pihea Trail.

Oahu

- Maintained 27.2 miles of trails and 38.8 of access roads.
- Provided twelve portable toilets and erected 25 miles of fence line at the Kahuku Motorcross Park
- Established connector/reroute trail between two trails in Makiki Valley
- Installed 57 recycled retention safety steps, three benches; and graveled over one hundred and fifty yards of damaged and slippery trail conditions.
- Utilized 857 volunteers for 3936 person hours on various trail restoration projects.
- Conducted trail-head monitoring for use surveys.
- Replaced damaged wooden steps with recycled plastic steps and rebuilt ¼ mile of trail at Manoa Cliff Trail.
- Added thirteen new recycled plastic steps in steep, eroding areas and applied gravel at Manoa Falls Trail.
- Replaced four signs and added five new signs within the Tantalus Mauka trail system.

Maui

- Maintained 70.5 miles of trails on Maui and Lanai
- Maintained 65.9 miles of access roads on Maui and 86.4 miles of access roads on Molokai.

Hawaii

- Maintained 15 miles of trails and 50 miles of access roads.
- Mowed roads within Puuanahulu and Puu Waawaa public hunting areas to reduce 4wd vehicle catalytic converter grass fires.
- Surveyed hunter access to portions of the Hamakua Forest Reserve to recover lost and obscure easements resulting from the sale of former sugar plantation lands.
- Helped fund construction of a concrete ford at the Wailuku River headwaters on the Mana Road.

Action: Protect ancient and historic trails and accesses.

- Conducted over 100 abstract requests to determine title and/or public access for historic trails, old government roads and lateral shoreline access routes.
- Collaborated with the Na Ala Hele Advisory Council with various land development projects to preserve the Ala Kahakai and various other state-owned historic trail alignments.
- Completed cultural assessment - mitigation plans for portion of the Puna Trail and portion of the Ala Kahakai.

Action: Conduct public hunting seasons, inventory and conduct surveys of game birds and mammals, and evaluate hunter harvest for setting seasons and rules, and manage public hunts.

Kauai

- 19,121 game mammal hunter trips on Kauai yielded a harvest of 1068 feral pigs, and 1434 feral goats. 1,954 game bird hunter trips yielded 568 game birds.
- Manned hunter checking stations for 19 weekends during special hunts, and conducted three public drawings to distribute hunting pressure for hunter safety.
- Established 21 new photo stations and vegetation transects in feral goat habitat on the Na Pali Coast and in Waimea Canyon. Conducted an two aerial census of feral goats
- Analyzed 44 deer browse survey transects, assessed feral pig impact on 26 transects in Alakai Wilderness Preserve and Na Pali Kona Forest Reserve. Visited eight feral goat exclosures, assessed effects of drought on feral goat, black-tailed deer and range conditions.

Oahu

- Completed two helicopter surveys to assess feral goat populations in Makua Keaau and Waianae Kai Public Hunting Areas .
- Completed 4 game bird surveys to assess distributions and abundance of game birds in the Kuaokala Game Management Area.
- Conducted, in cooperation with USDA Wildlife Services Branch transect surveys in 10 public hunting areas to quantify feral pig populations and radio telemetry studies of feral pig movements in the Kuaokala GMA. Six pigs were radio collared and tracked for a period of six months to determine home range.

Maui

376 hunters removed 699 axis deer, 532 mouflon sheep, 422 pigs and 105 goats on 4,745 hunter trips during game mammal hunts. Gamebird hunters took 317 gamebirds on 309 hunter trips.

Hawaii

- Captured six feral sheep and outfitted them with radio transmitters to gather information on their movements in and around the Puuanahulu and Puu Waawaa public hunting areas.
- Installed photo stations and plant enclosures in Puuanahulu and Puu Waawaa public hunting area to monitor changes in plant composition over time.
- Conducted browse surveys to monitor browse utilization by feral sheep in the Puu Waawaa public hunting area.
- Enlisted hunters and their bird dogs to conduct preseason forecasts of the fall game bird season.
- Conducted wild turkey gobble counts to monitor presence and densities of tom turkeys in various public hunting areas.
- Utilized electronic feeder, infrared game counter/camera, and rocket net to capture and mark wild turkeys in the Kaohe GMA. The birds were banded and outfitted with radio transmitters to monitor their daily/seasonal movements, nesting success, and habitat preference.
- Utilized volunteers to gather harvest data at hunter checking stations during game bird and mammal seasons.
- Approximately 1539 hunter trips were taken each year into public hunting areas for big game. Another 1617 trips were made by hunters into game bird hunting areas.

Action: Construct and maintain forest and wildlife recreational facilities such as trail shelters,arboreta, picnic grounds, viewpoints, signs, bridges and campgrounds.

Kauai

- Maintained 30 picnic and trail shelters and 284 acres of arboreta.

Oahu

- Maintained Campgrounds A & B in the Mokuleia Forest Reserve, 16 picnic shelters in the Koolau and Waianae Mtn. Range, 3 composting toilets in campgrounds, and 120 acres of arboreta.
- Construct and maintained 2 gates and mileage markers for the Mokuleia Forest Reserve.
- Installed eighty trail advisory signs.

Maui

- Maintained 72 acres of arboreta and constructed new plant identification signs and installed them in the Keanae arboretum and along the Waikamoi ridge trail.
- Maintained Waikamoi, Puohokamoa and Haipuaena stream recreation areas, and the Waikamoi ridge trail viewpoints on Maui.
- Maintained the Waikolu pavilion, the sandalwood pit and Waikolu lookouts on Molokai.

Hawaii

- Installed warning signs at Haena Beach and Pololu Valley.

- Maintained 60 acres of recreational facilities. 9 campsites, 2 trail shelters, 4 Clivus systems and 1 outhouse for public use.

Action : Improve game wildlife populations and habitat by planting food crops, noxious vegetation and predator control, and game bird restocking where appropriate.

Kauai

- Cleared 153 acres of brush and weed infested rangeland in Kekaha GMA, seeded 155 acres with Pensacola Bahia grass and/or Bermuda Grass to improve game bird habitat.
- Imported 1,050 game farm pheasant chicks for brooding, rearing and release at Kekaha GMA to improve game bird hunting.
- Began plans and environmental assessment for proposed Hanahanapuni Rifle Range and Umauma Field Archery Range

Oahu

- Installed 0.5 miles of fence line to allow rotational grazing to keep vegetation levels manageable and enhance gamebird habitat.
- Mowed 12 acres to improve both game bird habitat and hunter access.
- Controlled predators using live trapping and shooting, under contract to the Wildlife Services Branch, USDA (6 wild dogs, 80 feral cats and 1441 mongooses were removed in the Kuaokala and the Makua Keaau Public Hunting Areas).

Hawaii

- Mowed approximately 200 acres in public hunting areas to enlarge wildlife openings and enhance utilization by game birds and mammals.
- Planted approximately 2,000 mamane, naio, and ulei seedlings in Puu Waawaa Cooperative Game Management Area.
- Maintained experimental mamane tree plot in Puuanahulu GMA.
- Released 200 pheasants with the cooperation of the Big Island Bird Hunters club into the Kapapala Cooperative Game Management area.

Action: Construct and maintain hunter checking stations, wildlife water units, hunter informational, boundary, and safety zone signs, and game feeding sites.

Kauai

- Constructed four hunter shelters, with fire rings and water tanks in Mokihana Ridge GMA. to increase hunter access to remote parts of Hunting Unit E.
- Posted 259 new hunting area management signs.
- Managed 17 hunter checking stations, two game bird feed sites, 37 game water units, and 1.5 miles of fenced exclosures.
- Replaced a 10,000 gallon water tank and 6000 square foot rain catchment, and 1.5 miles of pipeline on Mana Ridge, Kekaha GMA, 0.2 mile fence constructed for rain catchment protection, and release pen for 1,000 captive reared

- 55 volunteers provided 506 hours manning hunter checking stations, posting signs, distributing game feed, attending hunter meetings, planning rifle range development, processing game tags, assisting with game operations, rearing and releasing game birds.

Oahu

Maintained 22 game bird water units, 10 miles of access roads at Kuaokala GMA.

Constructed 2 additional game bird water units and 2 game bird release pens to enhance gamebird hunting opportunities.

- Monitored 12 hunter check stations on a monthly basis to collect hunter effort and success data from each area.
- Digitized topographical maps of Oahu public hunting areas were produced as 24"x36" signs, and were posted at each hunter check-in station.
- Two helicopter surveys were performed in the Makua Keaau PHA to assess goat population trends and resource impacts.
- Installed 10 information sign-boards by DOFAW personnel and volunteers at the entrance to five Oahu Public Hunting Areas.

Maui

- Maintained 69 hunter check stations, and 390 boundary informational or safety zone signs in game management areas and forest reserves.

Hawaii

- Maintained and serviced 11 hunter checking stations, 52 feeding stations and watering units and 107 signs identifying public hunting areas.
- Constructed new hunter checking station at Puu Waawaa Ranch
- Maintained and serviced 10 hunter checking stations.
- Constructed or renovated 9 gamebird guzzlers in Kaohe/Mauna Kea GMAs utilizing donations/contributions from hunting organizations and local merchants.
- Installed 10 new signs on game bird guzzlers acknowledging sponsors.
- Installed 2 miles of poly-pipe in Puu Waawaa public hunting area to transport ranch well water to game guzzlers.
- Built a new hunter checking station at Kapapala Cooperative Game Management with materials and labor donated by bird hunters.

Action: Advocate for public access by commenting on development plans and forming agreements with private landowners to increase public use of trails and accesses.

Kauai

- Continued working on acquiring public access in Moloaa, Kaholalele Road and the Old Cart Road.

Oahu

- Finalized parking and public access through the private subdivision of Waialae Iki V for the Wiliwilinui trail.

Maui

Hawaii Division of Forestry & Wildlife
FY 1998-00 Accomplishments

- Negotiated with developers of a new subdivision for re-alignment and management of a portion of the historic Hoapili trail.

Hawaii

- Continued collaboration by the Na Ala Hele Advisory Council with Oceanside 1250 for the restoration of the Keauhou-Napoopoo trail alignment and preservation of the Old Cart Road, and the Sea Cliff Development to preserve the coastal trail alignment
- Provided comments on the draft environmental assessment for the Keopuka Lands proposed development relating to State ownership and public use of the Keauhou-Napoopoo trail and The Old Cart Road.
- Resolved a Kiholo land exchange and obtained concessions to restore segment of the Huehue-Kiholo Trail and a single family residential construction at Kona Paradise Subdivision to preserve segment of the Ala Kahakai

Action: Provide additional hunting opportunities by developing new public hunting areas and creating incentive program to encourage more hunting on private lands.

Hawaii

- Built a multi-purpose .8 million gallon reservoir at Kapapala Ranch through the cooperative effort of ranch management, hunters and Wildlife Branch personnel. The facility is designed to benefit both wildlife and livestock.
- Revegetated 600 hundred acres of pastureland with legumes to benefit livestock and wildlife. Constructed 3 exclosures totaling 1.5 acres for food crop plantings to benefit game and non-game wildlife in Kapapala Ranch.
- Offered game bird and game mammal youth hunting opportunities to hunters 15 years old and under accompanied by a licensed adult in various public hunting areas.
- Increased spring bearded turkey season from 21 days to 31 days in March.
- Organized a cooperative hunting program with Ookala Dairy on State of Hawaii lease lands at Ookala and Humuula.

Action: Develop responsible mechanisms to manage commercial uses such as encourage eco-tourism in ways that sustain the natural resources and provide benefits to the local community.

- Established the Commercial Trail Tour Activity (CTTA) Permit to provide a mechanism to allow for regulated amounts of commercial tours on trails and access roads regulated under Title 13-130, Na Ala Hele Administrative Rules. Issued 11 permits that generated approximately \$17,000.00 in revenue. Established commercial trail monitoring sites on Kauai and Maui to measure for changes to trail surface.
- Initiated the design and construction of an automated commercial reservation system and public Na Ala Hele Website site, accessible through the Internet and telephone. Funding for this project is from a contract and grant from the Hawaii Tourism Authority, with matching funds through the Federal Recreational Trails Program.

FOREST PRODUCTS DEVELOPMENT PROGRAM

FY 1998-00 Accomplishments

Objective: Broaden the State's economic base by producing, improving, and assisting in the production of high quality forest products to support a sustainable forest industry that maintains and creates jobs while generating revenue for the State of Hawaii.

Action: Encourage private investment for commercial forest development.

- Participate in the Hawaii Forestry and Communities Initiative which has increased from the eight founding member government organizations in 1997 to thirty-five public and private participants in 1999
- Produced timber inventory for degraded koa lands in Honomalino in cooperation with The Nature Conservancy of Hawaii
- Enhanced marketing opportunities for Hawaii's existing industry by co-sponsoring a branding program (Hawaii's Wood), co-funding the hiring of a marketing coordinator, and commissioning an intensive study on the international competitiveness of eight tree species found in Hawaii.
- Coordinated the development and funding of a comprehensive, multi-focus training program to improve forest industry member skills in reforestation, road building, and logging.

Action: Plan and administer commercial forest management activities on State land which includes resource inventory and forest product sale administration.

- Conducted timber mapping and inventories on approximately 32,510 acres of State and private lands - identifying millions of dollars of resource and giving landowners new management options. The Waiakea Timber Management inventory was used to advertise the first large State timber sale in 20 years.
- Produced timber inventory and maps in cooperation with Division of Hawaiian Homelands for Humuula/Upper Piihonua tracts on the Island of Hawaii
- Remeasured 30 long-term growth plots and 20 regeneration plots
- Sold \$ 62,405 worth of forest products, including 34,000 board feet of eucalyptus, and nursery seedlings

Action: Provide private landowners and processors of forest products with technical forestry assistance.

- Involved hundreds of landowners, businessmen, community leaders, government agency representatives, and citizens in learning about the positive benefits of forestry and participating in the development of it. Co-sponsored the 1998 Forestry Symposium (143 participants), the

- 1999 Hamakua Community Logging Workshop (108), the 1999 Carbon Sequestration Workshop (85), and the 2000 Forestry 2010 Conference (134).
- Established an extension forestry program at University of Hawaii at Manoa - first ever for the State. Dozens of relevant forestry documents have been catalogued and distributed to landowners and managers in need of forestry extension materials. Cooperative agreements between the University and the private sector have resulted in pooled resources for five demonstration projects on two islands and three public information workshops.
 - Made all timber inventory results available on State web site
 - Provided technical forestry assistance to 529 landowners

Action: Administer State and Federal cost sharing programs such as urban forestry and forest stewardship.

- Provided urban and community assistance to 72 individual homeowners and groups
- Awarded \$ 291,000 to 21 landowners enrolled in the State Stewardship Assistance Program
- Approved five Forest Stewardship Management Plans bringing an additional 3,761 acres under Program management.
- Provided \$ 207,992 to 72 participants in the Kaulunani (Urban and Community Forestry) program

Action: Operate the Central Tree Nursery in Kamuela and district nurseries for distribution of high quality tree seedlings for reforestation, special use plantings such as windbreaks and propagation of native plants for out planting.

- Produced 228, 953 tree seedlings statewide for timber, windbreak, erosion abatement, etc. purposes

PUBLIC INFORMATION & STEWARDSHIP PROGRAM

FY 1998-00 Accomplishments

Objective: Develop volunteer and information programs for natural resource management that allow meaningful and productive community involvement in the stewardship of natural resource on public lands.

Action: Develop a website that will give the public easy access to information about DOFAW, ongoing Division projects, and basic conservation information.

- Developed DOFAW web site <http://www.state.hi.us/dlnr/dofaw>
- Created and continue to support an extensive, comprehensive, interactive Internet information site at hawaii-forest.org and www.state.hi.us/hfciforest

Action: Work with the Hawaiian community to develop appropriate protocols for sustainable traditional and cultural gathering.

- Issued first special use permit allowing the practice of traditional fishing within the boundaries of Ahihi-Kina`u NAR.

Action: Encourage private citizens to work on natural resource management projects by supporting community volunteer programs.

- Began a long term community forestry project at Ookala on Big Island on former sugar lands involving local high school students, teachers, and community leaders in the design, establishment, and management of the forest.
- Expanded trails volunteer work program on Kauai
 - 48 hours of volunteer from Boy Scout Troop 148 installed quarter mile marker on the Okolehau Trail, Hanalei.
 - Kauai Sierra Club adopts Okolehau Trail.
 - 96 hours of volunteer time was expanded on the Nualolo Cliff Trail.
 - 93 hours of volunteers from the Kauai Resource Conservation Program did weed control work at Pihea Trail.
- Utilized 857 volunteers for 3936 person hours on various trail restoration projects on Oahu.
- Enlisted hunters and their bird dogs to conduct preseason forecasts of the fall game bird season. and volunteers to gather harvest data at hunter checking stations during game bird and mammal seasons on Hawaii Island.

Action: Develop information and educational materials on Division's programs such as maps, reports, brochures, teachers packets, videos, and posters.

- Helped develop an educational curriculum in tropical forestry at the newly named UH Hilo College of Agriculture, Forestry and Resource Management by partially funding an eight-course Certificate program in forestry. Seventeen students are currently enrolled in the program.
- Created signage for Ka`ena Point Natural Area Reserve
- Created and distributed forest bird exhibit for use at schools and public events throughout the State
- Represented DLNR at eighteen environmental fairs and festivals throughout the State
- Produced all maps for DOFAW public hearings throughout the State

PLANNING AND ADMINISTRATIVE SUPPORT PROGRAM
FY 1998-00 Accomplishments

Objectives: (1) Formulate and provide planning processes appropriate to fulfilling programmatic responsibilities. (2) Provide administrative support services that coordinate and manage the Division's fiscal, budgetary, infrastructure, personnel, and contracts administration requirements.

Action: Formulate and advocate program goals, policies, and plans.

- Produced evaluation of sustainable forestry report entitled: "Criteria and Indicators for Sustainable Forest Management in Hawaii"
- Facilitated production of "Management Guidelines for Division of Forestry and Wildlife"
- Instrumental in planning and implementing Public Safety Wireless Network (PSWN) radio system planning workshop in Honolulu
- Produced 189 maps supporting the Division's resource management programs

Action: Develop alternative sources of revenues for management programs.

- Instrumental in securing \$1.2 million Gap Analysis Program (GAP) funding for identifying and protection of biodiversity in Hawaii

Action: Administer Federal cost sharing programs and other relevant grant requests.

- Refined database program and complied all timesheet reports within the Division.

Action: Develop and manage technology appropriate to support planning and operational needs.

- Planned and implemented office network, incorporating email and internet access for all Admin staff

Action: Provided needed repair and maintenance of facilities

- Installed emergency power generator and building repairs to Mauna Loa microwave radio site